

ABSTRACT

A method for environmental monitoring and bioprospecting includes the steps of: (a) utilizing a testing device having: (i) a container having a fluid inlet and outlet, (ii) a plurality of capillary microcosms situated within the container, each of these capillaries having an inlet and outlet that are configured so as to allow for fluid flow through the capillaries, each of these capillaries further having a means for covering its inlet and outlet so as to prevent flow through the capillary, (iii) a pump connected to the container outlet, the pump being configured so as to draw fluid from the surrounding environment into the container's inlet and through the capillaries, (iv) connected to the outlet of the container, a means for collecting the flow through the container, and (v) a check valve connected downstream of the container to prevent the backflow of fluid into the container, (b) adding specified test substances to the device's capillaries, wherein these substances are to be analyzed for their ability to accelerate a specified biotransformation process in the subject environment, (c) locating this device in this environment and opening the capillary covering means so as to allow fluid from the surrounding environment to flow through the container and capillaries, (d) leaving the device in situ for a temporal duration sufficient to incubate phenomena occurring within the capillary microcosms, (e) retrieving the testing device, and (f) analyzing phenomena occurring with the capillary microcosms using automated analysis schemes and commercially available robotics.